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ABSTRACT

This study examined the congruence of teaching method and observed teacher behavior. Its purpose was to find out the actual behaviors in which teachers engaged when using a specific teaching method and whether or not these behaviors were congruent with those dictated by a theoretically based teaching model. The specific objectives of the study were to: (1) describe, via frequency and percentage data, observed teaching behaviors in each of six teaching methods--discussion, development/discovery, recitation/review, presentation, guided practice, and independent practice; (2) articulate from a review of the supportive theory and underlying assumptions a set of expected or anticipated behaviors for each teaching method; and (3) examine for congruence the descriptive data regarding observed teacher behavior and the theoretically expected behavior. The subjects included a non-random sample of 1,003 public school classroom teachers from across all grade levels. The results indicated that presentation is not formal "lecture" but rather interaction intensive. Also, teachers' presenting behaviors included supportive behaviors such as restating, emphasizing, and giving examples. Across the board in the methods, teachers devoted a good deal of time to positive feedback and giving informational responses. (JD)

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Congruence of Teaching Method and Observed Teacher Behavior

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Introduction

Most of what is found in the literature regarding teaching methodology concerns either a theoretical description of the protocol associated with the major instructional methods (e.g., discussion, lecture, inquiry) or a comparison of one method with another in terms of projected teacher behavior and appropriate curriculum contexts. There seem to be very few empirical studies available which have attempted to substantiate empirically the commonly accepted descriptions of the various teaching methods (Specht, 1985).

These theoretical descriptions currently available have served well the intent to prepare teachers to use the various teaching methodologies and to provide a context within which to describe--within limits--the dynamics of the methodologies; however, an accurate and empirically supported description of the methodologies is needed for more sophisticated, contextual analysis of teacher behavior and, subsequently, for more accurate data for the assessment of teacher performance. In addition, Kindsvatter, Wilen, and Ishler's (1988, p. 203) assertion that "the teacher's choice of methods has been less often a rational decision than defaulting to a comfortable pattern" may imply that teachers need more than theoretical descriptions to assist them in matching and adapting the methodologies to the particular contexts they confront in the classroom, as well as varying the methodologies they use.

If one defines teaching method as a "pattern" of teaching behaviors selected and sequenced to facilitate the achievement of

instructional goals and objectives (Kindsvatter, Wilen, & Ishler, 1988), then it seems reasonable that the observation of those patterns as they actually function during instruction would provide much needed insight. More and more, the systematic observation of teaching is playing an interesting and cyclical role in teacher preparation and evaluation. From the early works of Ned Flanders to the current, widespread use of systematic observation techniques in teacher performance assessment and evaluation models across the country, the operational definition and objective observation of actual teacher performance serves many functions, ranging from providing data for use in clinical supervision/professional development to providing objective measurement data by which evaluative judgments may be made.

Theoretically, the strength of measurement objectivity, validity, and reliability brought to this process by systematic observation methodology would make recommendations or value judgments viable across teaching methods and other contextual/classification variables as well. This particular theoretical notion, however, has not been examined across the broad range of teaching methods or the broad range of observed teacher behaviors. The scope of existing studies which do focus on both teaching methods and/or systematic observation of teacher behavior is more often than not limited to as few as two or three methods and/or the use of an observation system which isolates as few as two or three types of teacher behavior. The need exists to investigate the broad range of teaching behaviors in the context of a broad range of teaching methods, with a view toward establishing a conceptual base which describes and confirms

teaching behavior/teaching method compatibility for further and more specific study.

The major purpose of this study was to examine the congruence of teaching method and observed teacher behavior. Specifically, what are the actual behaviors in which teachers engage when using a specific teaching method and are these behaviors congruent with those dictated by the theoretically-based teaching model? The specific objectives of the study were to (1) describe via frequency and percentage data observed teaching behaviors in each of six teaching methods, (2) articulate from a review of the supportive theory and underlying assumptions a set of expected or anticipated behaviors for each teaching method, and (3) examine for congruence the descriptive data regarding observed teacher behavior and the theoretically expected behavior.

Method

Subjects

The subjects for the study included a non-random sample of 1003 public school classroom teachers from across all grade levels and subject areas in one southeastern state. The data include two observations of 45-60 minutes for each of the cases.

Instruments

The instrument with which the data for the study were collected, the Classroom Observation Record (COR), is a low-inference, contingency-scored observation scale designed for use in a teacher evaluation model. The behaviors included in this

broad, sign system were identified by group consensus and based on a thorough review of related research regarding teaching method, teaching effectiveness, and appropriate research. This observation scale includes more than 200 specific teacher behaviors which can be observed discretely. See **Figure 1** for a breakdown of behaviors included on the scale. Notice that the instrument also provides for the collection of a number of context variables. Predominant teacher activity--one of the foci of this study--is one of the context variables recorded and includes the following teaching methods: (1) discussion, (2) development/discovery, (3) recitation/review, (4) presentation, (5) guides practice, (6) independent practice, (7) drill, (8) assesses student progress, (9) reteaches, (10) observes learner activity, (11) spends extensive time with individual, and (12) non-instructional activity.

Procedures for Collecting Data

While the COR is still in its developmental stages, the data base used in this study was collected by a cadre of trained observers who had successfully passed a knowledge test and achieved a minimal (.75) level of inter-observer agreement following an extensive and well-documented training program.

The observation included completing a COR for each five-minute interval of instruction--four minutes to code occurring teacher behaviors and one minute to code contextual variables for the previous four minutes. Therefore, a 45-minute observation included nine CORs, and so on.

Of the two observations for each case/teacher, one was scheduled beforehand and the other simply announced at the outset

of the day during which the observation was to occur. COR booklets were delivered to, computer-scored and analyzed at a central location.

Working Definition of Teaching Models

It is presumed that instruction consists of a variety of teacher behaviors structured and orchestrated to effectively achieve instructional purposes. According to Kindsvatter, Wilen, and Ishler (1988, p. 195), teachers "synthesize teaching techniques into instructional methods" which suit their contexts and purposes. These methods commonly consists of "patterns" of teacher behaviors, often described theoretically in methods texts or by researchers in order to provide a structure for the investigation of the relative merits of various teaching methods. A particular teaching method may, of course, be executed in a variety of ways, depending upon subject matter, student population, teacher personality and style, etc. Although variations in style are appropriate and generally indicate a teacher's command over instructional decisions, the present study was directed toward a description of discernible "patterns" of behavior and these variations in style are not addressed.

Discussion. While there exists a variety of approaches to discussion (e.g., guided or structured discussion, open-ended or reflective discussion), there are some general procedures commonly associated with its implementation in the classroom.

1. **Introduction:** an attempt to orient students regarding what is to follow. The teacher may accomplish any of several behaviors during this stage of the lesson--gaining the attention of the learners, stating the objectives of the discussion/lesson,

providing a set induction or springboard, identifying the rationale or purpose of the discussion (including the issue or topic to be discussed) and outlining procedures to be followed during the discussion.

2. **Background Information:** an attempt to clarify expectations and to provide data critical to the success of the discussion. Teachers ideally continue to outline procedures for conducting the discussion by reminding students of points of courtesy, the importance of staying on task and so on. Equally as important is the teacher's attempt to explain and/or clarify fully any information related to the discussion topic or issue, such as terms, examples, etc.

3. **Interaction:** an attempt to examine with students the topic or issue. The teacher may accomplish this activity in a variety of ways, depending upon the approach to the lesson. For example, if the lesson is to be open-ended or reflective, student questions and student comments are important--with minimum structure from the teacher. However, discussions generally are more structured (Dillon, 1979) and involve more use of teacher questions and teacher responses. A variety of divergent, convergent and recall questions may be appropriate for sustaining the discussion. In addition, the teacher may respond to student responses, student questions and student comments in a variety of ways--waiting, no response, negative feedback, correcting, positive feedback, accepting/neutral, giving information, cueing, etc. At any rate, the balance of teacher control and student control is such that the students are encouraged to think, the discussion is sustained, students are encouraged to contribute,

ideas are well supported and the content of the lesson is covered. Besides asking questions and responding to students, teachers may find themselves following up on student answers or comments, relating comments to previously learned material or to other topics, giving additional information in response to students and/or assessing student progress along the way.

4. **Conclusion:** an attempt to summarize or to reach closure for the discussion. Teachers may achieve the closure of a discussion lesson in a number of ways. One way is simply to review what has transpired and, at the same time, to reach some agreement as to the outcome of the discussion. Another tactic might be to relate the content of the discussion lesson to previous learning and to other topics--perhaps even to effect a transition to the next lesson. Still another approach might be to extend the discussion or to examine its implications for other related topics or issues. Again, the teacher might find himself reviewing and relating to some extent.

With regard to context, the discussion method might be observed in use in a large group setting or with several small groups. It seems reasonable to expect that students will be participative, thus less passive and more active. Affectively, teachers might be encouraging questions, encouraging ideas, encouraging opinions and expressing enthusiasm.

Development/Discovery. Collins and Stevens (1983) described the structuring of lessons in order to achieve student discovery of principles, generalizations etc., rather than a more deductive teacher presentation of subject matter. Similarly, Good and Brophy (1987) referred to this method as the inquiry approach.

While this approach sometimes is less structured and emphasizes climate (for questioning and hypothesizing) more than specific technique, there are some procedures generally associated with the method (Fielding, Kameenur, & Gersten, 1983). The procedures generally associated with this method are described below.

1. **Introduction:** an attempt to orient students to the problem or question to be addressed or investigated. As is true with most other methods, the teacher may state the objectives of the lesson, give a purpose or rationale for the lesson and outline the general procedures to be following during the lesson. In addition, however, the discovery approach includes the definition of a central problem or question, a connection of the problem or question with students' own experiences and clarification of the problem in terms of background information, terminology, etc. Kauchak and Eggen (1989, p. 310) referred to this stage as "forming a data base."

2. **Hypothesizing:** an attempt to solicit from students tentative solutions or answers to the central problem/question. Teachers may choose to have students ask questions to which they answer a simple "yes" or "no;" however, the more typical format is such that teachers guide the development of the lesson through the use of a variety of leading questions--divergent, convergent and/or recall. Wait time, of course, is critical for development/discovery lessons. Teachers encourage students to examine their hypotheses through the use of follow-up questions and a variety of responses, e.g., correcting, giving positive feedback, giving negative feedback, giving more information.

Students are encouraged to examine isolated bits of information and to begin to see related patterns and relationships (Kauchak & Eggen, 1989). Teachers may find it necessary at certain points throughout the lesson to present additional content, to restate or emphasize certain ideas or to supply more background information to keep the lesson moving. Transitions are also of key importance, especially since the teacher is moving toward the isolation and examination of a particular relationship, hence the so-called "convergent phase" (Eggen & Kauchak, 1989, p. 119).

3. **Hypothesis-Testing:** an attempt to have students collect, organize and interpret data related to their hypotheses. Teachers, for the most part, use questions or allow students to question them about demonstrations in order to facilitate the collection of data. In some cases, data collection could be done independently or in small groups in a lab setting. Still, the role of the teacher is to assist the student in identifying sources of evidence, organizing collected data and analyzing/interpreting information which either supports or refutes generated hypotheses.

4. **Conclusion:** an attempt to reach closure through the formal statement of the principle, generalization or law being investigated. Teachers, using student-generated and student-tested hypotheses, seek to have students draw a conclusion and define the principle in question. It may also be appropriate to relate the substance of the discovery lesson to previously learned material or to other principles and topics. It can also help, especially with students who are inexperienced with discovery learning, to review the inquiry process at this point.

With regard to context, development/discovery may occur with or without the direct supervision of the teacher and in large or small groups; however, most often teachers are observed leading discovery learning with a whole group--centered around some demonstration or illustration that the whole class has viewed. Certainly, students should be active participants in the lesson, especially at the hypothesizing and hypothesis-testing stages. Teachers using this method probably would be observed encouraging questions, encouraging ideas, encouraging opinions, and expressing enthusiasm.

Recitation/Review. Although some refer to the recitation/review method as a form of discussion (Kindsvatter, Wilen, & Ishler, 1988), many view it as a distinct and separate method with its own protocol and purpose. It probably would be safe to assert, however, that recitation/review quite often occurs in conjunction with other methodologies. The procedural protocol may not be quite as well-defined for recitation/review as with other methodologies, but there are certain teacher behaviors commonly identified with it.

1. **Introduction:** an attempt to orient students to the lesson, using any of the following--gaining students' attention, stating lesson objectives, defining lesson purpose/rationale, and/or outlining lesson procedures. Theoretically, an information base has already been established and the recitation or review concerns that material previously covered or taught (Kauchak & Eggen, 1989).

2. **Checking for Understanding:** an attempt to check student mastery or understanding of subject matter or to provide practice

with such. In terms of teacher behavior, this typically means involving students in a questioning session, with the teacher eliciting performance, asking convergent or recall questions, and providing very little wait time after questions. Questions may be directed to individuals or to the group. Teachers' responses generally are limited to no response, negative or positive feedback, corrections and accepting/neutral. Rapid fire questions and brief teacher response to answers are characteristic of this model.

3. **Extending Understanding (optional):** an attempt to have students use their knowledge to explore more meaningful and more sophisticated relationships. Some would claim that once the teacher moves into this phase, he has left the recitation/review method; however, if students are being challenged through practice to think on a higher level about the material being recited in order to enhance the mastery, one might still classify the method as recitation/review.

Contextually, the recitation/review method might take place with or without the leadership of the teacher, in a small or large group. One might expect to see increased student involvement either verbally within a large or small group teacher-led recitation review or non-verbally with the seatwork approach. Teachers generally establish high expectations with this method and, in doing so, express enthusiasm and optimism that students will perform well.

Presentation. There exists a variety of labels for this particular method, e.g., input (Hunter, 1984), lecture, etc. The phases of presentation generally include the following.

1. **Introduction:** an attempt to orient and to focus students on a logical unit of content. Teachers gain the attention of the learners, state the objectives of the lesson, use a set induction, define the purpose/rationale of the lesson, and/or outline the procedures for the lesson. Furthermore, the teacher often will present some background information (perhaps in conjunction with the set induction) or relate content to previous learning or review previously taught material so as to set the present content in context. At any rate, the students are made aware of the focus of the present lesson and how it juxtaposes with other lessons.

2. **Presentation:** an attempt to familiarize students with a well-sequenced, usually hierarchically-arranged body of knowledge. The teacher is telling, restating and emphasizing key points, supplementing with background information, providing illustrative examples, and connecting to current events in order to facilitate student understanding. Throughout the presentation, transitions are used to move from one major aspect of the lesson to another so that students perceive the structure of the presentation. Of equal importance, since very little "formal" lecture is used in the K-12 classroom, are the teacher's attempts to have students interact during the presentation and to use auxiliary materials and equipment to enhance understanding (Kindsvatter, Wilen, & Ishler, 1988). Teachers seek to sustain student attention and interaction through the use of questions--divergent, convergent, recall, status--and by allowing students to ask questions and make comments. Visual and auditory aids

such as maps, objects, movies, films, models and handouts are tools available to the teacher for this purpose.

3. **Conclusion:** an attempt to organize student learning into the broader context of the curriculum. Teachers may desire to integrate the material presented with previous learning, other topics or subjects, and even future learning. Smooth transition to the next lesson often is given a place of importance--reviewing and projecting toward the relationship of today's material with tomorrow's.

In context, presentation ordinarily occurs in a large group setting with the teacher. Students are somewhat passively engaged--listening and watching--much of the time; however, at other times they are more actively engaged--taking notes, asking questions, making comments, answering questions. Teachers may establish high expectations for student reception of the material being presented and express enthusiasm in order to maintain student attention.

Guided Practice. Guided practice typically is considered to be an integral aspect of skills instruction, direct teaching or instruction (Rosenshine, 1987) and other more comprehensive strategies or models of instruction. Treating guided practice as a discrete methodology does, however, imply a discernible pattern of teacher behaviors.

1. **Task Definition:** an attempt to describe to students a task to be accomplished, skill to be practiced, content to be rehearsed, etc., with the close supervision of the teacher. The teacher generally directs the students to a task to be done as a group (perhaps orally) or individually at their desks with close

teacher monitoring and much interaction. The essential purpose of the task is to assess student progress and to gauge readiness for independent practice.

2. **Task Completion and Interaction:** an attempt to monitor and respond to student work in such a way as to give meaningful corrective feedback, facilitate a high success rate and prepare for independent work. Teachers might respond to student work (oral and written) by criticizing, giving negative or positive feedback, correcting, accepting/neutral, giving additional information, or cueing. "Guided" implies that the teacher is actively available to assist students in the successful completion of a task.

With regard to context, the teacher may have students working as a large group, in small groups, or individually--and while the teacher may not be actively leading an oral practice session, he definitely is monitoring student performance. Students are actively engaged and the teacher generally is encouraging much effort and setting high expectations.

Independent Practice. Like guided practice, independent practice is most often viewed in conjunction with more comprehensive models, e.g., direct instruction. But also like guided practice, it has some typical teacher behaviors associated with its use.

1. **Task Definition:** an attempt to describe to students a task to be accomplished, skill to be practiced, content to be rehearsed, etc., without the interactive monitoring of the teacher. The teacher may be observed directing the students to

the task with considerable guidance at the outset or during the initial stages of the task. Again, the essential purpose of independent practice is to assess student progress and to gauge mastery.

2. **Task Completion and Special Needs:** an attempt to have students complete assigned tasks without the interactive assistance of the teacher. The teacher may still supervise (perhaps from a distance) the task and may even be more responsive to students who are slower or who, upon observation, were not ready for independent practice. At any rate, practice continues until students are fluid. Teachers may exhibit few responsive behaviors as the students work--except in the case of working with individual students extensively and remedially.

Contextually, teachers generally have students practice alone at this stage. Almost always, students are actively engaged after the teacher has set clear and high expectations for task completion and success.

Analysis of Data

The data analysis methods included the use of descriptive techniques of frequency and percentage information regarding observed behavior patterns related to specific teaching methodologies. The congruence study is a conceptual analysis achieved by comparing the patterns which emerge from the descriptive analysis with the theoretical behavior patterns which resulted from a study of theory and research regarding teaching method.

Results and Discussion

The results and discussion of this study are presented in two ways: (1) general observations regarding the resulting data and (2) comparisons of observed behaviors with the theoretical expectations and further analyses of specific behaviors as they relate to selected methods.

General Observations. The six teaching methods utilized in this study emerged from the operational definition of predominant teaching activity. If a teacher had five or more records in one teaching activity or teaching method, it was assumed to be the predominant teaching activity of that class period. Using this convention, a number of teacher observations was excluded from the study. Furthermore, the number of cases of predominant teaching activity for the remaining six methods on the instrument and the theoretical/conceptual background limitations further reduced the number of cases to be included. The 730 remaining records involved in the study resulted in 40 percent of the cases being in presentation, 32 percent guided practice, 19 percent recitation/review, 5 percent discussion, 3 percent independent practice, and 1 percent development/discovery. While these data are accurate for describing teachers being observed, it would be dangerous to assume that because only 1 percent of the teachers in this sample utilized development/discovery as a predominant teaching activity that is it actually occurring at that low rate. Each of the teachers on whom these evaluative data were being collected was aware of the nature of the observation system and, in turn, aware of the difficulty of controlling certain teaching

models. Therefore, these data should not be generalized to what is occurring in an over-all picture of the teaching methods utilized on a day-to-day basis.

For all of the teachers observed, orienting behavior comprises 3 to 5 percent of the observed behavior. In all six teaching methods studied, over half and close to two-thirds of all behaviors observed fall in the questioning/responding categories.

One final across-the-board observation is that very few assessing behaviors were observed in these six methods. With a high of 2.5 percent in independent practice to a low of none in development/discovery, assessment behaviors were not widely observed and recorded. (The number of cases (7) in development/discovery must be remembered in interpreting this observation.)

Congruence of Observed Behavior and Conceptual Teaching Models

On the whole, an examination of Tables 1 through 7 and the accompanying discussion support a high level of congruence between observed teaching behavior and behavior expected from a study of the theoretical models.

Discussion. The discussion model (Table 1) is clearly introduced with 5 percent of the observed behavior being orienting and 11 percent being directing. Fourteen percent of the observed behaviors are in the presenting category supporting the notion that the teacher must give appropriate background information as well as on-going information and data. The most telling proportion of the observed behaviors--65 percent--indicates a highly interactive process between student and

teacher, teacher and student. Roughly 1 percent of the observed behaviors are assessing, but 5 percent are relating and reviewing--important aspects of discussion.

On Table 2 the types of questions ranging from eliciting to waiting after questions are presented for the discussion method in the first column. Forty-eight percent of those questions are at the recall level--questions about what one has been previously taught or learned. Twenty-eight percent of the questions are convergent with 6 percent being divergent. This model is clearly teacher focused.

Development/Discovery. The limitation of the small sample size (7) must be herein noted. Regardless, the data resulting from an analysis of these 7 cases supports the general notions of a development/discovery model. The response to the need for the teacher to present initial information and continues to supply information as the process continues is reflected in 18.5 percent of the behaviors falling in the presentation category. Further, on Table 2 the kinds of questions asked by the teacher are broken down in the second column of data regarding the development/discovery methods. An examination of those data indicate that 68 percent of the questions are convergent or divergent, requiring some kind of processing on the part of the student. It was somewhat surprising to note than 19 percent of the questions were of a recall nature. It is entirely possible that those recall questions are necessary for the teacher to focus the availability and usefulness of already existing knowledge and skills as the students work on this development/discovery.

One critical observation regarding development/discovery is the absence of wait time indicated in the final type of question on Table 2 and the absence of waiting after questions on Table 6. In development/discovery, it is essential that the teacher allow time for the student to think, to consider before responding to or initiating interaction. The fact that 72 percent of the teachers responses are giving positive feedback and information supports the general development/discovery model. Also the 21 percent of uses the student's information or comments is congruent with development/discovery. (See Table 6.)

Recitation/review.

An important aspect of recitation review is the development of a "data base" from which the teacher and students can work. The observed behaviors in orienting and directing (17 percent) and presenting (13 percent) support the building of the "data base" and the establishment of procedures for the activity. Sixty-four percent of the behaviors fall into the interactive categories of questioning and responding. Five percent of the behaviors occurs in relating and reviewing--a proportion that is as high as in the discussion and development/discovery models and slightly higher than other models. One would expect the presence of a large proportion of recall and convergent questions in this teaching model, and that expectation is indeed accurate with 70 percent of behaviors falling in the recall and convergent category. (See Table 2.)

Presentation. The presentation teaching method is often the most maligned and misunderstood of the models. In the data

collected in this study (Table 1), the teacher behaviors when presentation was considered the predominant teaching activity was indeed characterized by more presenting (20 percent as compared with 18 percent in the development/discovery model) than the other models. However, in no way can this be considered a static or passive model. Fifty-nine percent of the behaviors fell in the category of interacting with questioning and responding clearly indicative of the interaction going on when presentation is the teaching model. Less than 5 percent (4.9) of the behaviors fell in the relating/reviewing categories. The highly interactive process with great numbers of teacher questions and student questions and comments is a very important consideration when one evaluates the quality of teaching performance. One cannot simply evaluate the quality of the material presented but also the quality of the interaction during the process.

In Table 7, the kinds of presentation are presented. Fifty-eight percent of the presentation behaviors are telling with 16 percent being examples and 13 percent restating. There is minimal use of the behavior categories of background, life experiences and current events.

Guided practice. Sixty-three percent of the behaviors are interactive. There was 16 percent presentation and 13 percent direction. Neither of these proportions is out of the expected range; however, one might have expected somewhat more direction in guided practice than in the other models except for independent practice. The data presented in Table 2 indicate several interesting points. In guided practice, there was considerably more eliciting activity--14 percent as compared with

5 in discussion and recitation/review and .5 in development/ discovery. The presence of this elicitation is congruent with the activity involved in guided practice. The presence of 62 percent convergent and recall questions is also supportive of guided practice. The 7 percent divergent questions in a bit puzzling, however. One would expect that the student would be converging on the application of a rule or procedure or the identification of a concept in guided discovery--activities that might not necessitate divergent questions. The divergent question in this method may have been used to raise the level of thought or to introduce some creativity to the process.

In Table 4 the kinds of responding in guided practice are presented. It is important to note that 77 percent of the teachers' responses to students answer or no answers was to give positive feedback and/or give information. In response to student questions or comments, the teachers responded again with positive feedback and additional information at the 85 percent level.

Independent practice. The data for independent practice was a bit surprising in that well over half (59.2 percent) of the behaviors fell into the interactive mode with 17 percent of the behaviors being directions. The specific types of responding used by the teachers are presented in Table 5. Roughly 45 percent of these behaviors are in the categories of teacher moving to students to students moving to teacher, indicating seat work or individual work modes. Twenty-two percent of this movement is initiated by students. Following these interactive

behaviors, one can observe that roughly one-third (32.5 percent) of the behaviors are (1) teacher question, (2) student response, and (3) teacher response, a behavior pattern most congruent with independent practice when teachers are giving more information or clarification to students working independently.

Conclusion

The theoretical/conceptual definitions of each instructional method appeared to be supported--for the most part--with a few exceptions.

- A somewhat surprising number of recall questions (48 percent) posed during the discussion method. One would expect questions to be predominantly divergent and/or convergent in this model. Recall questions are more theoretically suited to recitation/review.
- A noticeable absence of wait time after questions during development/discovery. Theoretically, if the focus is on the inductive processing and development of ideas, students would be allowed more time to reflect on responses to questions posed.
- A surprising lack of directing behaviors associated with guided practice as contrasted with the other methods (except individual practice). A possible explanation would be that guided practice was teacher directed group practice rather than individual seatwork.

- An unusual number of interactive behaviors during the ~~individual~~ independent practice mode. A possible explanation is that the situation is primarily a one-on-one between teacher and student.

Some additional interesting and encouraging observations can also be made about the results of this study. The data indicated that discussion lessons are highly interactive, and that presentation is not formal "lecture" but rather interaction intensive. Also, the data indicate that teachers' presenting behaviors include more than just "telling" behaviors, e.g., supportive behaviors such as restating, emphasizing, giving examples. Across the board in the methods, teachers devote a considerable portion of time to positive feedback and giving informational responses.

While the following observation in no way attempts to evaluate the quality of teaching behavior, it is personally and professionally encouraging to these researchers to note the degree to which classroom execution of these instructional models parallels the theoretical descriptions of the models. This observation should give heart both to the teacher preparation institutions and to inservice training efforts--but, most of all should be a "pat" on the back to the **teacher in the classroom.**

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Table 1

Frequencies and Percentages of

Teacher Behaviors by Teaching Method

Teaching Behavior	Discussion (n=37)		Development Discovery (n=7)		Recitation Review (n=142)		Presentation (n=294)		Guided Practice (n=231)		Independent Practice (n=19)	
	f	%	f	%	f	%	f	%	f	%	f	%
Orient	138	5	22	3	429	4	824	4	593	4	45	4
Direct	332	11	66	10	1415	13	2472	12	1863	13	176	17
Present	402	14	119	18	1369	13	4145	20	2305	16	137	13
Relate	82	3	35	5	221	2	519	2.5	199	1	10	1
Review	55	2	16	2	303	3	417	2	253	2	19	2
Assess	22	1	3	0	102	1	172	1	193	1	26	2.5
Question	1202	41	194	29	4256	39	7236	34	5012	35	292	28
Respond	711	24	210	32	2726	25	5353	25	4103	28	325	31.5
Total teaching behaviors tallied in the above categories for the above teaching methods	2944		665		10,821		21,138		14,521		1,030	

Table 2

Frequencies and Percentages of

Questioning Behaviors by Selected Methods

Questions	Discussion (n=37)		Development Discovery (n=7)		Recitation Review (n=142)		Guided Practice (n=294)	
	f	%	f	%	f	%	f	%
Elicit	57	5	1	.5	201	5	701	14
Divergent	73	6	40	21	406	10	367	7
Convergent	334	28	91	47	1238	29	1300	26
Recall	573	48	36	19	1752	41	1824	36
Status	129	11	23	12	509	12	712	14
Multiple	23	2	3	1.5	52	1	1	0
Waits	13	1	0	0	98	2	61	1
Total Questions	1202		194		4256		5012	

Table 3

Frequencies and Percentages of

Responding Behaviors in Presentation

(n = 294)

Teacher Responses	Student Answer/No Answer		Student Questions/Comments	
	f	%	f	%
Waits	77	2	1	0
No Response	96	3	22	2
Criticize	10	0	0	0
Negative Feedback	134	4	47	5
Positive Feedback	1775	49	318	32
Gives Information	1002	28	520	52
Cues Students	407	11	26	3
Uses Student Information	107	3	68	7
Total	3608		1002	

Table 4

Frequencies and Percentages of

Responding Behaviors in Guided Practice

Teacher Responses	(n = 231) Student Answer/No Answer		Student Questions/Comments	
	f	%	f	%
Waits	10	0	2	0
No Response	84	4	22	3
Criticize	2	0	1	0
Negative Feedback	119	5	27	4
Positive Feedback	1285	57	263	39
Gives Information	446	20	310	46
Cues Students	282	12	35	5
Uses Student Information	43	2	19	3
Total	2271		679	

Table 5

Frequencies and Percentages of

Responding Behaviors in Independent Practice

(n = 19)

Teacher Responses	Teacher More to Student/ Student More to Teacher		Student Questions/Comments	
	f	%	f	%
Waits	0	0	0	0
No Response	14	9	4	6
Criticize	1	1	0	0
Negative Feedback	8	5	3	4
Positive Feedback	36	24	23	32
Gives Information	65	44	40	56
Cues Students	23	16	2	3
Uses Student Information	1	1	0	0
Total	148		72	

Table 6

Frequences and Percentages of Responding

Behaviors in Development/Discovery

Teacher Responses	Development/Discovery (n = 7)	
	f	%
Waits	0	0
No Response	0	0
Criticize	0	0
Negative Feedback	3	5
Positive Feedback	22	35
Gives Information	23	37
Cues Students	1	2
Uses Student Information	13	21
Total	62	

Table 7

Frequences and Percentages of Presentation Behavior

Teacher Responses	Development/Discovery (n = 294)	
	f	%
Tell	2395	58
Restates	527	13
Background	324	8
Examples	664	16
Current Event	40	1
Life Experiences	195	5
Total	4145	